sponding pairs of antenna resonating elements in antenna **138-2** may be used as measurements to obtain performance metrics based on the received response signal. If desired, testing may be performed for pairs of antenna resonating elements in a radial pattern (e.g., testing the pair of antenna elements that include elements **154-1** and **154-3**, the pair of antenna elements that include elements **154-6** and **154-8**, the pair of antenna elements that include elements **154-2** and **154-4**, etc. in FIG. **9**). If desired, during testing one or more (or all) of antenna resonating elements **172** may be operable to detect signals transmitted from each separate pair of antenna resonating elements **154**.

[0157] This example is merely illustrative. If desired, any other testing scheme and/or performance metrics gathering scheme may be used to determine one or more optimal antenna resaonting elements. While this example uses antennas **138-2** and **40-2**, similar operations may use antennas **138-1** and **40-3** in addition to or instead of antenna **138-2** and **40-2**.

[0158] At step **190**, device **130** (e.g., control circuitry **132** in devices **130**) may perform device pairing for wireless communications to establish the wireless communication link using the one or more optimal antenna elements on devices **10** and **130**. As an example, device **130** may actively use optimal antenna resonating elements **174-1** and **174-3** and disable antenna resonating elements **174-2**, **174-4**, **174-5**, **174-6**, **174-7**, and **174-8**. Similarly, device **10** may actively use optimal antenna resonating elements **156-5** and **156-7** (which may be aligned with antenna resonating elements **174-1** and **174-3**) and disable antenna resonating elements **156-1**, **156-2**, **156-3**, **156-4**, **156-6**, and **156-8**. If desired, device **130** may configure the wireless communication link to optimize for communication with device and/or for any suitable application for which the wireless communication link is established.

[0159] At step **192**, device **130** may perform data transfer operations (as an example) with device **10** using the established wireless communication link. In particular, the established wireless communication link may be as a high data rate, bi-directional, and near-filed wireless communication link through which data transfer operations may be performed.

[0160] If desired, at step **194**, device **130** (e.g., control circuitry **132** in devices **130**) may (periodically) determine whether the one or more antenna elements selected in steps **188** remain optimal. If desired, step **194** may be performed when relative low amounts of data are being transferred between devices **10** and **130**. If desired, step **194** may be performed at regular time intervals. If desired, step **194** may be performed when movement of at least one of devices **10** and/or **130** is detected. In response, devices **10** and **130** may re-establish the wireless communication link based on one or more updated and optimal antenna elements on devices **10** and/or **130**. As an example, device **130** may perform step **188** to determine the one or more updated and optimal antenna elements. If desired, devices **130** may also (periodically) determine whether settings for the established wireless communication link should be updated and re-establish the wireless communication link using the updated settings.

[0161] These steps are merely illustrative. If desired, control circuitry **28** on device **10** (FIG. **6**) may process one or more steps to determine optimal antenna resonating elements (instead of control circuitry **132** on device **130**).

[0162] FIG. **12** is a diagram of illustrative states (e.g., modes of operation) for device **130** (e.g., for wireless circuitry **134** and/or control circuitry **132** in FIG. **6**) when performing data transfer operations with device **10**. In particular, prior to any interaction with device **10**, device **130** may be in a radio-frequency circuitry idle state **202**, in which one or more portions or all of wireless circuitry **132** is inactive. In response to determining that device **10** is nearby (e.g., adjacent to device **130**), device **130** may be in a device detection and pairing state **204**, in which device **130** may determine an optimal set of antenna elements both on device **130** and on device **10** through which device pairing and an establishment of a wireless communication link may occur (e.g., steps **186-190** in FIG. **11**). After pairing device **130** with device **10**, device **130** may be in a mode configuration state **206**, in which device **130** may configure settings (e.g., use application-specific protocols, tune antenna elements, switch between different duplexing modes, determine transmit power, etc.) for the established wireless communication link. After the wireless communication link is configured, device **130** may be in a data transfer state **208**, during which data may be freely conveyed between devices **130** and **10** (e.g., step **192** in FIG. **11**). Device **130** may return to idle state **202** when device **10** is removed from the proximity of device **130**, when data transfer operations are no longer necessary, etc.

[0163] In an exemplary configuration, a user may place the first device onto the second device without having to focus on perfectly aligning the first device to the second device (e.g., about the Z-axis). In a first example, the alignment or attachment structures may exhibit forces that automatically align the first and second devices when the first device is placed onto the second device, thereby aligning the wireless circuitries (e.g., antennas) of the first and second devices and configuring the first and second devices to form a reliable wireless communication link. In a second example, the first and/or second device may determine one or more optimal antenna elements or pairs of antenna elements in antenna arrays on the first and second devices based on the imperfectly aligned orientation between the first and second devices. The one or more optimal antenna elements or pairs of antenna elements in antenna arrays on the first and second devices may then be used to form a reliable wireless communication link.

[0164] By providing alignment or attachment structures and/or antenna arrays on first and second communicating devices (e.g., as described in connection with FIGS. **6-12**), high data rate, near-field wireless communication links may be robustly established between the first and second communicating devices.

[0165] The foregoing is merely illustrative and various modifications can be made to the described embodiments. The foregoing embodiments may be implemented individually or in any combination.

1. An electronic device, comprising:

a display having a display cover glass;

a rear housing wall that opposes the display cover glass;

first and second antenna resonating elements that overlap the rear housing wall and that are operable to transmit and receive radio-frequency signals above **10** GHz through the rear housing wall; and

alignment structures disposed at the rear housing wall and configured to apply a magnetic force through the rear housing wall.